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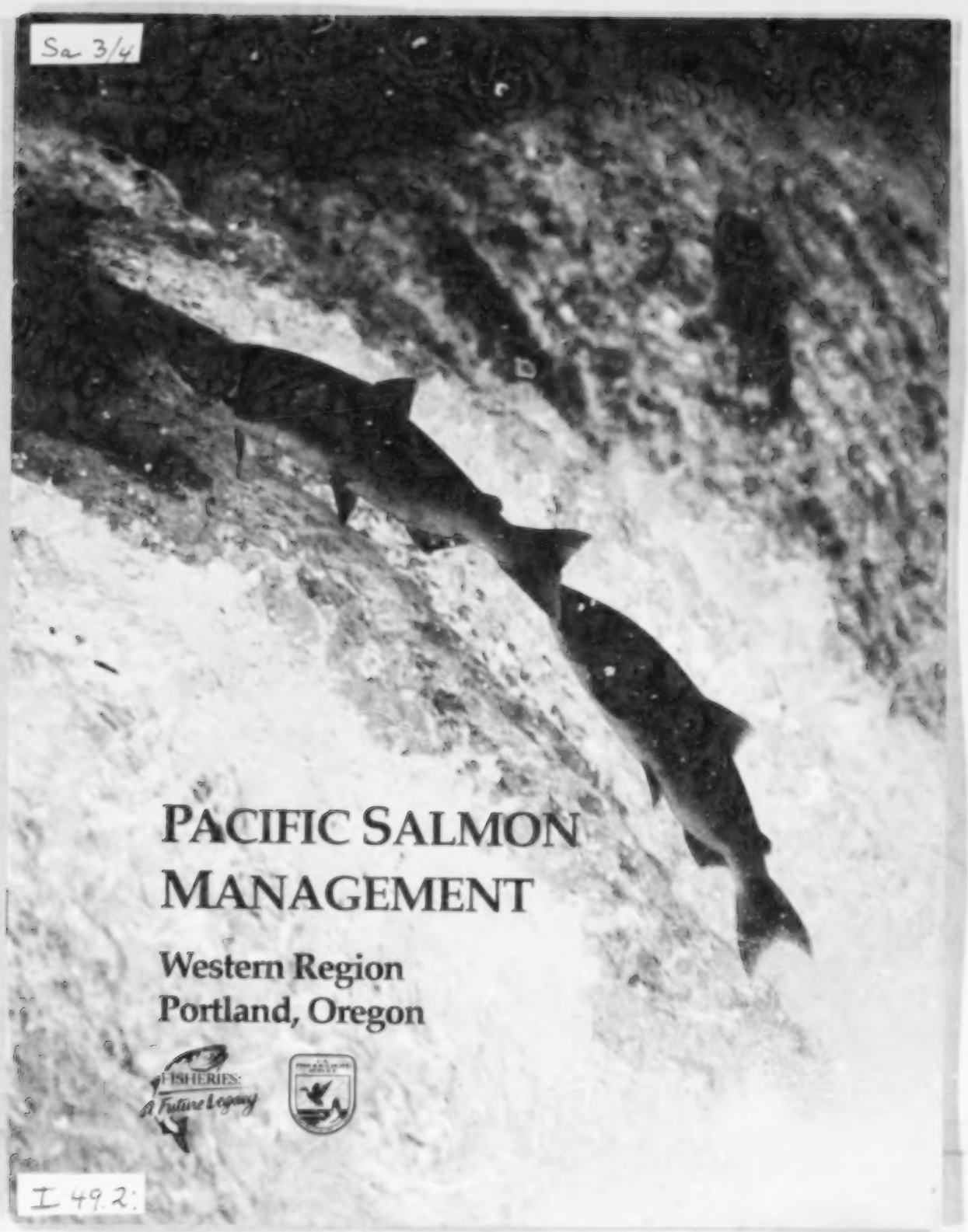


# PACIFIC SALMON MANAGEMENT

Western Region
Portland, Oregon

FISHERIES: A Future Legacy

I 49.2:

## Western Region
## U. S. Fish & Wildlife Service

*(map not to scale)*

*(Cover photo: Allstock)*

**United States Department of the Interior**
**FISH AND WILDLIFE SERVICE**

911 N. E. 11th Avenue
Portland, Oregon 97232-4181

TAKE PRIDE IN AMERICA

September 1991

Memorandum

To: Director, U. S. Fish and Wildlife Service
Washington, D. C.

From: Regional Director, Region 1
Portland, Oregon

Subj.: Briefing Document on Region 1 Fisheries
Vision for Salmon Restoration

The Fisheries Program in Region 1 has been developing a blueprint of the organization's future through a process called "Visioning". This process recently culminated in a definitive Vision Action Plan to restore the once great stocks of Pacific salmon through improved fisheries technology, habitat restoration, cooperative management, communications, employee development, and funding opportunities. This document, which is an update of our initial plan entitled "Pacific Salmon and Steelhead Management" published in 1988, describes our new, visionary plan for salmon restoration.

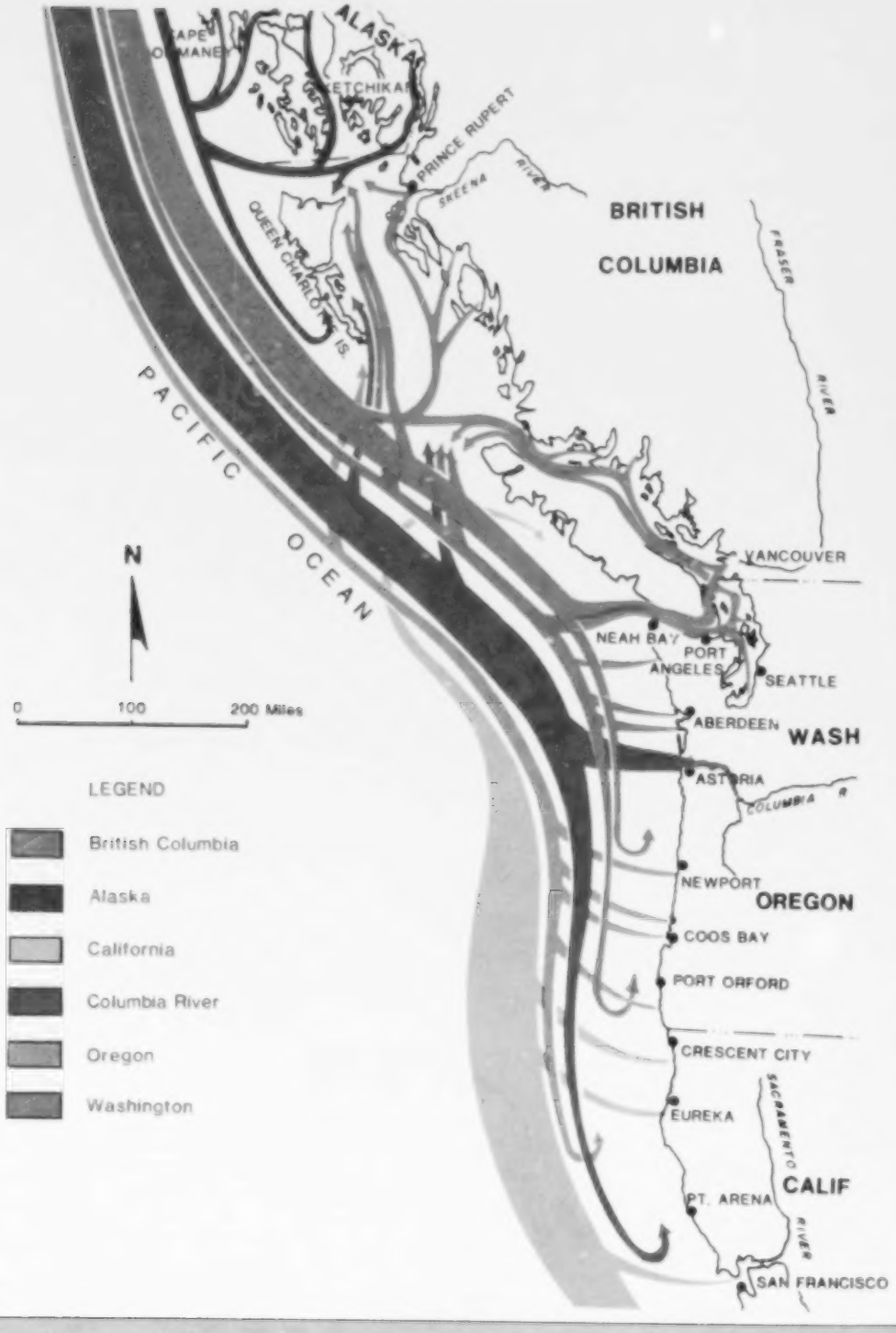
Human pressures on the valuable salmon resource are becoming extreme, to the point where more stocks are being considered for petitioning under the Endangered Species Act. We believe that now is the time to take a pro-active approach to salmon restoration. Using their Fisheries Vision, my staff has developed an excellent summarization of the situation and detailed the additional fiscal resources needed to prevent further salmon losses and restore depleted runs. We would be pleased to expand on any of the enclosed information if that would be helpful.

Marvin L. Plenert

FISHERIES:
*a Future Legacy*

# Chinook Salmon Migration Patterns

*(as shown by recapturing marked fish)*



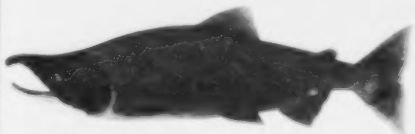
## The Resource

Fisheries management activities in the Western Region (Region 1) of the U. S. Fish and Wildlife Service focus on anadromous fish. Chinook, coho, chum and sockeye salmon and steelhead are the species of highest priority to the Service.

- Salmon and steelhead are wide ranging in the Pacific Ocean.
- All species return as adults to spawn on gravel river bottoms in fresh water.
- Salmon die following spawning, except steelhead may return to the ocean and spawn again in following years.
- Eggs incubate in the gravel for a number of weeks and then hatch.
- The newly hatched fish leave the gravel, feed and grow in natal streams, then migrate to the ocean as smolts.
- In the ocean, smolts mature to adults in one to five years, and then return to their stream of origin to spawn.

*Pink salmon - male, freshwater phase*

*Steelhead - saltwater phase*



*Sockeye salmon - male, freshwater phase*

*Chum salmon - male, freshwater phase*

*Coho salmon - male, freshwater phase*

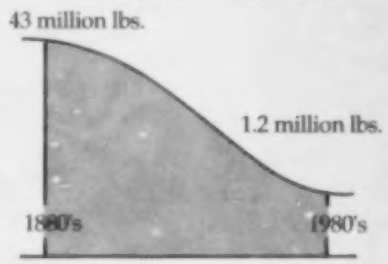
*Chinook salmon - saltwater phase*

## How Many Fish? Past & Present

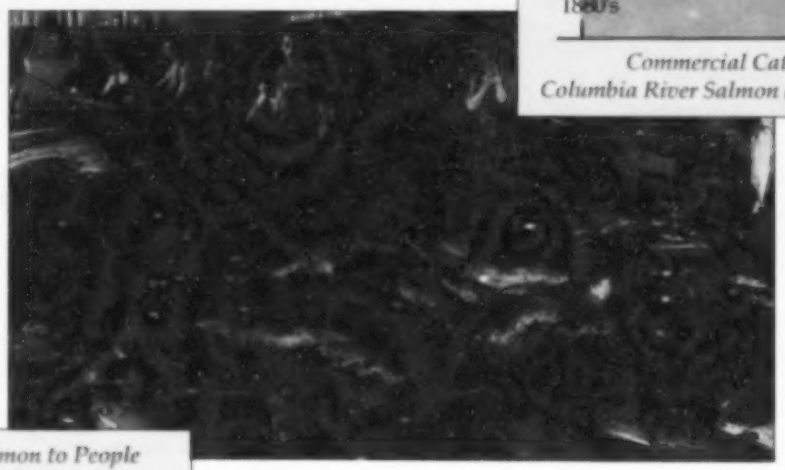
While adult salmon were once abundant, many fish stocks are now only a fraction of their historic numbers. Some stocks are already extinct while others are threatened with extinction.

- During the early 1800's the Columbia River Basin alone supported salmon runs of over 14 million fish. Today only 2.5 million salmon and steelhead migrate up the Columbia River and its tributaries.
- Columbia Basin tribes once harvested over 6 million fish annually. Now they harvest only about 1/4 million.
- Harvests must be shared by commercial, sport and treaty Indian fishermen.
- Enough fish must escape harvest to provide for future runs of salmon and steelhead.
- The processes and formulas for sharing the harvests are often federally mandated or court ordered and require cooperation between the managers and user groups.

*A Century of Declining Runs*

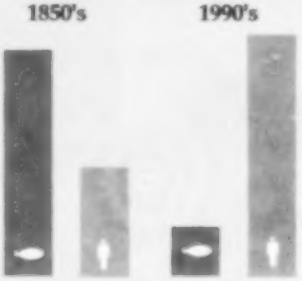



*Commercial Catch of Columbia River Salmon and Steelhead*



*Early Columbia River Cannery - Circa 1880*
(Oregon Historical Society)

*Ratio of Salmon to People*



## Many Factors Cause Decline

Overfishing and loss of habitat from logging, grazing and farming practices have contributed to the decline of salmon and steelhead runs. However, the major decline of the runs coincides with the construction and operation of dams for electrical power, irrigation and flood control.

- About 56% of the spawning habitat in the Columbia River Basin has been blocked or destroyed.
- In California, 85% of streams used by salmon in 1850 no longer provide suitable habitat.

◀ LOGGING
*Clearcutting - Molalla River Drainage*
*(National Marine Fisheries Service)*

▼ OVERFISHING
*Salmon Seining - Circa 1920*
*(Oregon Historical Society)*

DAMS ▶
*Grand Coulee Dam, Washington*

## High Economic Value

The abundance of salmon and length of commercial and sport fishing seasons have a direct bearing on the Pacific coast economies. This important resource is more valuable than one might imagine.

- 1980 Washington, Oregon and California commercial harvest was valued at $200,000,000 but because the stocks have declined, the value in 1990 was only $120,000,000.

- 1990 ocean sport harvest was valued at $50,000,000.

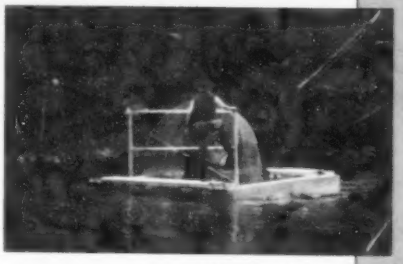
*Columbia River Gillnetter*
*© Allstock*

*Salmon Sport Fisherman*
*© Allstock*

- In Washington State alone, the total recreational salmon fishery has been valued at $120,000,000.

## Key Issues

- Wild Stock Preservation and Restoration
- Instream Flow for Migration
- Monitoring and Evaluation of Key Stocks
- Fish Culture
- Fish Health
- Employee Development
- Habitat Protection and Restoration
- Cooperative Fisheries Management



*Trapping Smolts*

## Our Fisheries Vision

### *In The Western Region, We Value:*

- healthy and self-sustaining fish populations.
- genetic integrity of wild, natural, and hatchery stocks.
- maintaining healthy freshwater and marine environments.
- preventing fish from becoming threatened or endangered.
- timely restoration of depleted stocks.

- a diversity of fishing experiences that balance biological, economic, cultural, and social needs.
- the professionalism and well-being of our employees.
- scientific leadership in fisheries management and stewardship.
- partnerships with state, tribal, public, and federal cooperators.
- open communications among our employees, cooperators, and the public.

### *Strategies And Actions*

A Visioning Action Plan, developed by the Western Region Fisheries Team, sets forth the strategies and actions to be implemented to move the organization to its goal of salmon and steelhead restoration consistent with the values it has adopted (above). The highest priority needs are outlined in the seven initiatives (Actions) which follow. Approximately $9,566,600 in new money and 23 new FTE's are needed to fully implement actions necessary to restore depressed salmon and steelhead stocks.

FISHERIES:
*a Future Legacy*

## *West Coast Fisheries Initiative*

**Component One: Wild Stock Assessment, Monitoring, and Evaluation.**

A coastwide monitoring and information system is critically needed for assessing and evaluating the relative condition of all Pacific salmon stocks. At a time when additional species are being considered for listing under the Endangered Species Act, information developed from a broad monitoring program is needed as an early warning system to alert agencies of serious decline of certain stocks and enable appropriate action to be taken. Pacific salmon stock monitoring and assessment information and recommendations for actions necessary to preclude listing of jeopardized stocks will be reported biennially to Congress.

*Radio-tracking Chinook - Sacramento River*

This initiative would also provide funding to expand the Western Region's activities under the Service's program to monitor key species and habitats for effects of global climate change (warming). The total required under this component is $600,000 annually and 6 FTEs.

**Component Two: Improved Hatchery Rearing/Release Techniques.**

It is critically important that hatchery programs be evaluated not only for their effectiveness in meeting smolt rearing and release goals but more importantly their effectiveness in producing quality smolts that survive to be caught as adults in the various fisheries. It is generally agreed that hatchery fish do not survive as well after their release as their wild counterparts. Carefully designed studies can help us to understand factors controlling survival and can lead to techniques that increase hatchery fish freshwater and marine survival. The same evaluations can contribute useful information on harvest patterns.

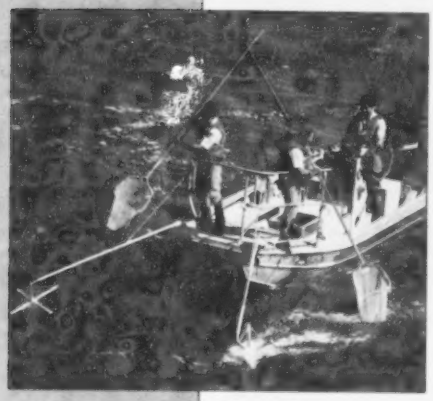
*Beach Seining*

Concerns over the genetic integrity of stocks also make it essential that the influence of hatchery fish on wild stocks be evaluated. While hatcheries can increase the total production of salmon, their operations have the potential for adversely impacting wild stocks; this must be avoided. The total required to implement actions under this component is $525,000 annually and 4 FTEs.

*Snorkeling to Investigate Streambeds*

**Component Three: Preservation of Severely Depressed Salmon/Steelhead Stocks.**

Loss of habitat or restricted access to habitat due to water development projects, irrigation diversions, deleterious land use practices, logging, etc., has adversely affected Pacific salmonids in all stages of their life cycle. Many wild/natural populations of salmon and steelhead trout have been decimated or extirpated while many of those that remain continue to decline. The Sacramento winter Chinook has been listed, and the Snake River sockeye and chinook have been proposed for listing under the Endangered Species Act. The Western Region needs to expand its role in the ongoing interagency process to develop measures to restore severely depressed stocks.



*Electrofishing - Sacramento River*

This component also addresses the need to identify and document critical fishery habitats that are key to the preservation and restoration of wild salmon and steelhead stocks. Work to protect and preserve them through a variety of protective measures or possible purchase would be done collaboratively with state, tribal, and other federal agencies. **The total required for this component is $800,000 annually and 8 FTEs.**

## *Employee Development*

The Western Region Fisheries Program, through its Visioning process, has identified employee development and training as one of its most important priorities. We believe this will require a continual investment in our most important resource -- a dedicated, motivated and effective workforce. Accordingly, and in keeping with the Servicewide emphasis on employee development, the Western Region proposes an initiative to improve and broaden employee development in four areas.

- Upgrade supervisory readiness training; improve leadership, supervisory, team building and media interaction skills of potential supervisors and assistant supervisors.

- Implement team oriented management by providing team building/team functioning training to all employees.

- Provide training to supervisors to further understanding of employee development, interpersonal skills and team oriented management.

- Provide workshops/training/career development opportunities for employees in job categories other than fishery biologist.

*Fishery Academy Training*

**The total required for employee development is $90,000.**

## *Recreational Fisheries*

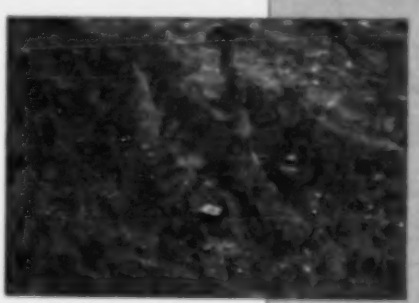
In light of the interagency National Recreation Fisheries Policy, and the Service's "Fisheries, U.S.A.", Region 1 Fisheries staff have begun investigating possibilities for implementing these policies. As stated in our Vision goals above, we value a diversity of fishing opportunities.

We have two primary opportunities in recreational fishing. The first is in developing sport fishing on Region 1 National Wildlife Refuges. There are eight Region 1 refuges on which special recreational fisheries projects have been proposed. Funds and personnel are needed to develop the necessary recreational fisheries plans.

The second recreational opportunity is in education and public information. As professional leaders in the fisheries community, we believe an important role is in educating the public about how to fish responsibly and about the importance of quality habitat to support quality fishing. The requirement for recreational fishing is $250,000 annually and 3 FTEs.

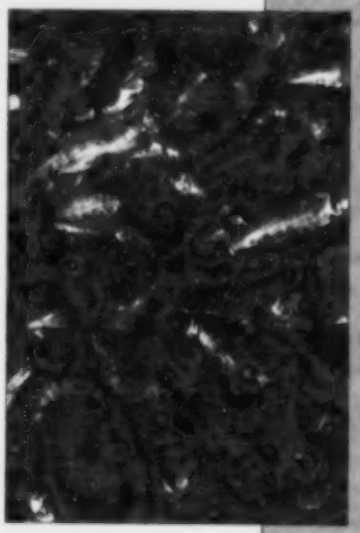
## *Fisheries Challenge Grant Program*

Since salmon are such an integral part of Northwest culture, state, tribal, and private fisheries interests often have human and fiscal resources to assist in salmon restoration projects. A Fisheries Challenge Grant program would allow the Service to tap those resources. Some of the ideas that have been proposed recently include improved fishing access, habitat restoration, public information and education. An added benefit of a challenge grant program is the high visibility for the Service when there is public involvement. Because the existing Challenge Grant Program is managed by the Refuge Division, it is often difficult to fit fisheries proposals into the criteria for funding. A separately funded and administered program should be developed within Region 1 Fisheries so that matching funds can be obtained to help prevent the declines of salmon populations. This effort would preferably not be limited to Service lands as is the existing program. An adequately funded Fisheries Challenge Grant Program would require $250,000 annually and 1 FTE.



## *Hatchery Water Supply Sterilization and Effluent Treatment Systems*

Losses of hatchery fish to disease continues to be a problem. Sterilization of incoming water can help to alleviate the spread of disease. Each hatchery water supply should be assessed for the necessity of sterilization. Then, if appropriate, systems should be designed and installed.



*Smolts*

Hatcheries are, at times, sources of pollution to downstream aquatic environments. Many hatcheries do not have adequate effluent treatment facilities. A team of regional experts would be formed to evaluate the treatment capabilities at each hatchery. The team will make recommendations to engineers who will design new systems where necessary. The final step will be the actual upgrades, where necessary.

Some water sterilization and pollution abatement projects have already been identified; they are listed under construction and rehabilitation, below. The new initiative would address additional needs. **The resources required to review, recommend, design, and install water supply sterilization and effluent treatment systems is $2,800,000 annually and 1 FTE.**

## *Hatchery Water Rights and Water Supplies*

*Spring Creek National Fish Hatchery, Washington*

The functional integrity of national fish hatcheries in the arid west depends on an adequate supply of excellent quality water. Resource management activities are now being constrained at fishery facilities in the Western Region by a lack of adequate water rights and the water resources they represent. A 1990 survey indicated nine facilities have inadequate water supplies.

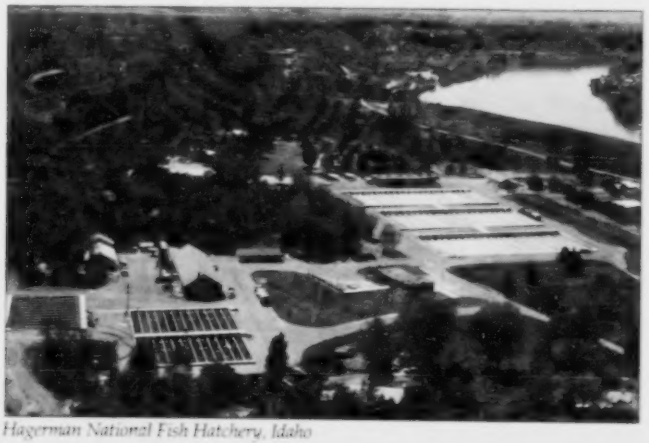
To fulfill fishery resource management objectives and responsibilities, a comprehensive water rights management program is proposed to address an increasingly complex array of legal, technical, and administrative water rights matters. It would include 1) installation of water rights quantification systems at field facilities to measure water use and 2) water rights identification and protection actions to document and protect Service water rights and water resources in adjudicative and administrative proceedings. **The total required for this program is $100,000 annually.**

## *Hatchery Construction/Rehabilitation*

Hatcheries are used extensively to mitigate for lost habitat, restore depleted stocks, and supply increased fishing opportunities. Many Region 1 hatcheries are in need of additional facilities or rehabilitation of existing facilities to optimize fish production. The following projects have been identified:

| New | **($1,000's)** |
|---|---|
| Makah NFH ozone treatment facility | $5,643 |
| Winthrop NFH spawning building and fish crowder | 1,272 |
| Coleman NFH Admin/Fish Health Lab/Visitor Center | 1,600 |
| Makah NFH adult holding/spawning facility | 1,623 |
| Quilcene NFH adult holding/spawning facility | 2,566 |
| **Rehabilitation** | |
| Leavenworth NFH pollution abatement facility | 1,027 |
| Winthrop NFH pollution abatement facility | 601 |
| Carson NFH Tyee Springs water intake system | 1,802 |
| Winthrop NFH water supply intake and drain | 600 |
| Little White Salmon/Willard NFH upper raceways | 2,800 |
| Leavenworth NFH adult holding/spawning facility | 1,224 |

The total resources required to complete these construction projects is $20,758,000. This could be apportioned at a level of $4,151,600 per year over five years.



*Hagerman National Fish Hatchery, Idaho*

# Overview of the Western Region Fishery Resource Program

The goal of the U. S. Fish and Wildlife Service fisheries program in the Northwest is to mitigate for salmon and steelhead losses and restore depleted runs. The once immense west coast salmon and other anadromous fish stocks have declined substantially, some stocks more than 90%, due to a combination of factors including over-harvest, dam and water diversion, logging, reduced stream flow, urbanization, pollution, agricultural and industrial development, and other land use changes resulting in substantial habitat losses and degradation. Fish losses resulting from these actions are replaced by a combination of hatchery production and habitat rehabilitation to improve natural production. In 1990, over 77,000,000 juvenile salmon and steelhead trout, expected to contribute nearly 900,000 adults to sport, commercial, and Tribal fisheries, were produced in a network of 17 National Fish Hatcheries. Further, over 1.4 million resident species were grown at these facilities to meet other recreational fishing opportunities.

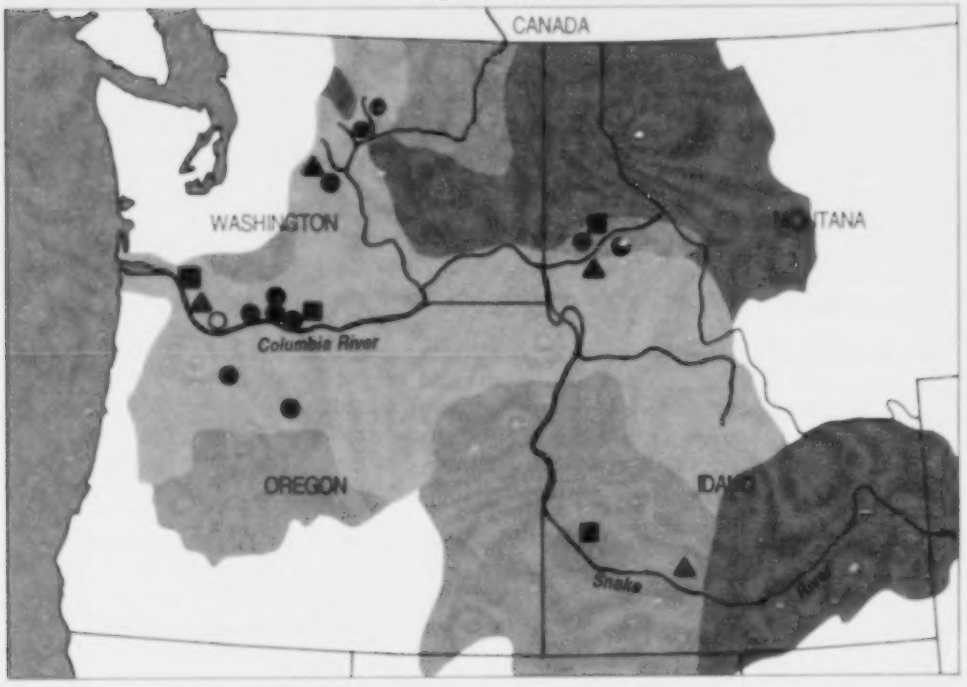
The Service's program is one of over 20 resource agency programs that share responsibility for the production and management of salmon and steelhead in the Pacific Northwest. Mandated responsibilities for fisheries mitigation and restoration are clearly defined in the legislation and interagency agreements. Through these agreements, the Service is playing a vital part in implementing domestic and international treaties and producing fish for sport fishermen and commercial harvest.

In addition to replacing fish lost to direct Federal actions, there are eight scientific Fishery Resource and River Coordinator Offices that negotiate hatchery production with other agencies, evaluate production success, and work to restore naturally spawning fish populations through cooperative interagency work groups. Four Fish Health Centers work closely with hatcheries, the Seattle Fisheries Research Center, and Fishery Resource Offices to maximize survival of young fish to adulthood by assuring these fish are as healthy as possible before release. An internationally recognized Salmon Technology Center provides direct technical and operational support not only to Fish and Wildlife Service hatchery operations but also to State, Tribal and Canadian hatcheries. The Center's contributions toward production of quality fish have significantly enhanced survival of hatchery fish by advancing scientific fish husbandry through nutritional studies, diet analysis, and hatchery production improvements.

The Service's Western Region fisheries program operates with an annual budget derived from three main funding sources. Approximately 45% of the budget is from funds appropriated to the Service by Congress for resource programs and 35% is appropriated funds which are reimbursed to the Treasury by the Bonneville Power Administration to cover costs of the Lower Snake River Compensation Plan Program. The remaining 20% is from reimbursable agreements with the National Marine Fisheries Service to operate hatcheries in Oregon and Washington (known as Mitchell Act hatcheries), from the Corps of Engineers to operate mitigation hatcheries as a result of their dam building activity on the Columbia Basin, and from the Bureau of Indian Affairs to conduct scientific investigations supporting harvest allocation agreements.

## Columbia River Basin

### Operations




**Areas of Interest**

- Area Accessible to Salmon
- Area Blocked by Dams
- Area Never Available to Salmon Due to Natural Barriers

**Fishery Field Offices**

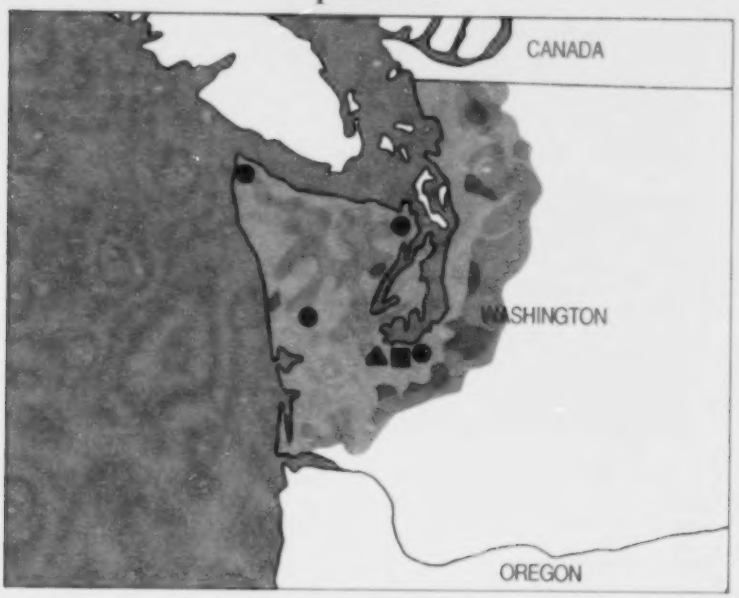
- ● 12 National Fish Hatcheries
- ▲ 3 Fishery Resource Offices
- ■ 2 Fish Health Centers
- □ 1 Technology Center
- ■ Lower Snake River Compensation Plan Administrative Headquarters
- ▲ Lower Snake River Compensation Plan Hatcheries and Satellites
- ○ Columbia River Coordinator Office

**Current Operations**

- Administer 22 Lower Snake River Compensation Plan facilities producing 14 million smolts for mitigation.
- Administer 12 National Fish Hatcheries producing 52.7 million smolts
- Administer an evaluation, contribution, and marking program for hatcheries.
- Provide technical assistance to United States, Canada and Pacific Fisheries Management Council committees.
- Monitor, evaluate, and restore wild stocks, and provide fish health services.
- Develop new technology for hatchery production and fish nutrition.
- Participate in the implementation of the Columbia River Integrated Salmon and Steelhead Production Plan.

## Puget Sound and Coastal Washington

### Operations




Areas of Interest

- Area Accessible to Salmon
- Area Blocked by Dams
- Area Never Available to Salmon Due to Natural Barriers

Fisheries Field Offices

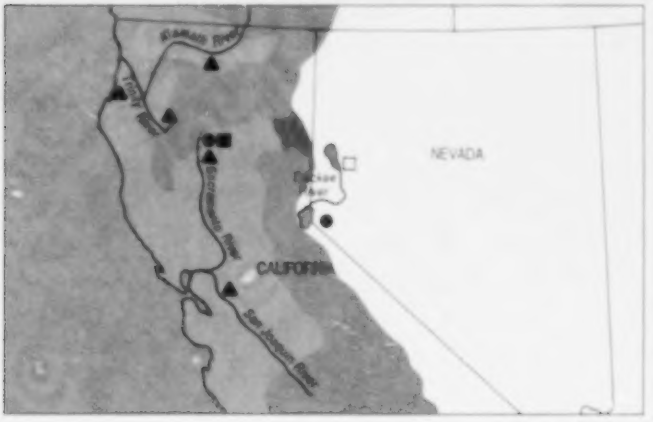
- 4 National Fish Hatcheries
- 1 Fishery Resource Office
- 1 Fish Health Center

Current Operations

- Administer National Fish Hatcheries - 10.4 million smolt production.
- Provide technical assistance to the Pacific Salmon Commission, Indian Tribes, and the State of Washington.
- Fulfill Secretarial Indian trust responsibility.
- Restore habitat on key river systems.
- Monitor, evaluate, and restore wild stocks.
- Provide fish health services.

# California - Nevada

## Operations




### Areas of Interest

- Area Accessible to Salmon
- Area Blocked by Dams
- Area Never Available to Salmon Due to Natural Barriers

### Fisheries Field Offices

- 2 National Fish Hatcheries
- 5 Fishery Resource/River Coordinator Offices
- 1 Fish Health Center
- 1 Special Fish Facility

### Current Operations

- Monitor and evaluate salmon and steelhead runs on the Sacramento, Klamath and Trinity Rivers.
- Secretary's representative on Klamath and Trinity River restoration efforts.
- Produce 20 million salmon and steelhead smolts from the Coleman National Fish Hatchery for mitigation of the Central Valley Project.
- Provide fish health services.
- Provide technical information on water quality needs for San Francisco Bay and Delta.
- Provide restoration effort for the threatened Lahontan cutthroat trout in Pyramid Lake, Nevada - 600,000 fish production.

# Fish and Wildlife Service Involvement

## Management Complexities

Pacific salmon and steelhead management is complex, with high public interest and many players. This diagram is illustrative of the over 70 federal, state and local agencies, tribes, councils, and committees which have some influence over salmon management or their habitat.

California Water Resources Control Board

Bonneville Power Administration

California Water Commission

Columbia River Compact

Pacific Northwest Utilities Conference Committee

County and Local Governments

Northwest Power Planning Council

Columbia Basin Fish and Wildlife Authority

Corps of Engineers

Bureau of Reclamation

Pacific Salmon Commission

Pacific States Marine Fisheries Commission

National Marine Fisheries Service

U. S. Fish and Wildlife Service

Pacific Fisheries Management Council

Northwest Indian Fisheries Commission

Environmental Protection Agency

Columbia River Inter-Tribal Fish Commission

Oregon Department of Fish and Wildlife

23 Northwest Washington Tribes

U. S. Forest Service

California Department of Fish and Game

Bureau of Land Management

13 Columbia River Tribes

Idaho Department of Fish and Game

Washington Department of Fisheries

National Park Service

Federal Energy Regulatory Commission

Montana Department of Fish, Wildlife and Parks

Washington Department of Wildlife

British Columbia Ministry of Environment

Bureau of Indian Affairs

Alaska Department of Fish and Game

Canadian Department of Fisheries and Oceans

Trinity River Fish and Wildlife Restoration Task Force

Klamath River Fishery Restoration Task Force

Klamath River Fishery Management Council

☆ U.S. Government Printing Office: 1991-594-813

**For More Information, please contact:**

Assistant Regional Director, Fisheries,
U. S. Fish and Wildlife Service
911 N. E. 11th, Portland, Oregon 97232-4181
(503) 231-5972